OM protein - protein search, using sw model

Run on: March 17, 2003, 07:13:51 ; Search time 6.83969 Seconds
(without alignments)
194.050 Million cell updates/sec

Title: US-09-787-082-7
Perfect score: 188
Sequence: 1 GLPVCKGKGAKCSRLMYDCCTGSCRSGKCTRG 32

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 112892 seqs, 41476328 residues

Total number of hits satisfying chosen parameters: 112892

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : SwissProt_40:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	% Query Match	Length	DB	ID	Description
1	151	80.3	71	1	CXOA_CONMA	P05484 conus magus
2	124	66.0	25	1	CXOB_CONCT	P58918 conus catus
3	122.5	65.2	26	1	CXOC_CONCT	P58919 conus catus
4	120	63.8	25	1	CXOB_CONMA	P05485 conus magus
5	115	61.2	27	1	CXO7_CONCN	P58916 conus conso
6	115	61.2	71	1	CXO3_CONST	Q9xzk2 conus stria
7	115	61.2	71	1	CXOA_CONCT	P58917 conus catus
8	114	60.6	73	1	CXOD_CONCT	P58920 conus catus
9	112.5	59.8	29	1	CXOC_CONMA	P37300 conus magus
10	104	55.3	29	1	CXOD_CONMA	Q26350 conus magus
11	98	52.1	72	1	CXOB_CONST	P28881 conus stria
12	75.5	40.2	29	1	CXO7_CONGE	P05483 conus geogr
13	64	34.0	72	1	MT12_MYTED	P80247 mytilus edu
14	59.5	31.6	66	1	MT3_RAT	P37361 rattus norv
15	59.5	31.6	68	1	MT3_MOUSE	P28184 mus musculu
16	59	31.4	72	1	MT1A_MYTED	P80246 mytilus edu
17	58	30.9	27	1	CXDB_CONTE	P24159 conus texti
18	58	30.9	72	1	MT1B_MYTED	O62554 mytilus edu
19	58	30.9	78	1	CXDA_CONTE	P18511 conus texti
20	57	30.3	64	1	MTA_STRPU	P04734 strongyloce
21	57	30.3	65	1	MTB_STRPU	Q27287 strongyloce
22	57	30.3	72	1	CXOA_CONST	P28880 conus stria
23	57	30.3	72	1	MT14_MYTED	P80249 mytilus edu
24	56.5	30.1	63	1	MT1_COLLI	P15786 columba liv
25	56.5	30.1	73	1	CXO6_CONGE	P01522 conus geogr
26	56.5	30.1	1589	1	DC13_DROME	P18171 drosophila
27	56	29.8	64	1	MT_STENE	P55953 sterechinus
28	56	29.8	72	1	CXO2_CONST	Q9xz15 conus stria
29	55.5	29.5	27	1	CXO6_CONRA	P58914 conus radia
30	55.5	29.5	61	1	MT1A_RABIT	P11957 oryctolagus
31	55.5	29.5	61	1	MT2B_RABIT	P80289 oryctolagus
32	55.5	29.5	61	1	MT2D_RABIT	P80291 oryctolagus
33	55.5	29.5	61	1	MT2E_RABIT	P80292 oryctolagus
34	55	29.3	61	1	MT1A_HORSE	P02800 equus cabal
35	55	29.3	68	1	MT3_HORSE	P37360 equus cabal
36	55	29.3	68	1	MT3_HUMAN	P25713 homo sapien
37	55	29.3	68	1	MT3_PIG	P55944 sus scrofa
38	55	29.3	72	1	CXO1_CONST	Q9xz14 conus stria
39	55	29.3	491	1	K2M2_SHEEP	P15241 ovis aries
40	55	29.3	615	1	FA12_HUMAN	P00748 homo sapien
41	55	29.3	813	1	YTQJ_CAEEL	Q19673 caenorhabdi
42	55	29.3	860	1	LDLR_HUMAN	P01130 homo sapien
43	54.5	29.0	26	1	CXO6_CONTU	P58915 conus tulip
44	54.5	29.0	26	1	CXO7_CONTE	P56714 conus texti
45	54	28.7	863	1	AD17_DROME	Q9vac5 drosophila

ALIGNMENTS

RESULT 1
CXOA_CONMA
ID CXOA_CONMA STANDARD; PRT; 71 AA.
AC P05484;
DT 01-NOV-1988 (Rel. 09, Created)
DT 15-JUN-2002 (Rel. 41, Last sequence update)
DT 15-JUN-2002 (Rel. 41, Last annotation update)
DE Omega-conotoxin MVIIa precursor (SNX-111) (Ziconotide).
OS Conus magus (Magus cone).
OC Eukaryota; Metazoa; Mollusca; Gastropoda; Caenogastropoda;
OC Neogastropoda; Conoidea; Conidae; Conus.
OX NCBI_TaxID=6492;
RN [1]
RP SEQUENCE FROM N.A.
RC TISSUE=Venom duct;
RX PubMed=10938268;
RA Lewis R.J., Nielsen K.J., Craik D.J., Loughnan M.L., Adams D.A.,
RA Sharpe I.A., Luchian T., Adams D.J., Bond T., Thomas L., Jones A.,
RA Matheson J.-L., Drinkwater R., Andrews P.R., Alewood P.F.;
RT "Novel omega-conotoxins from Conus catus discriminate among neuronal
RT calcium channel subtypes.";
RL J. Biol. Chem. 275:35335-35344(2000).
RN [2]
RP SEQUENCE OF 46-70.
RX MEDLINE=86070213; PubMed=4071055;
RA Olivera B.M., Gray W.R., Zeikus R.D., McIntosh J.M., Varga J.,
RA Rivier J.E., de Santos V., Cruz L.J.;
RT "Peptide neurotoxins from fish-hunting cone snails.";
RL Science 230:1338-1343(1985).
RN [3]
RP SEQUENCE OF 46-70.
RX MEDLINE=87299637; PubMed=2441741;
RA Olivera B.M., Cruz L.J., de Santos V., Lecheminant G.W., Griffin D.,
RA Zeikus R.D., McIntosh J.M., Galyean R., Varga J., Gray W.R.,
RA Rivier J.E.;
RT "Neuronal calcium channel antagonists. Discrimination between calcium
RT channel subtypes using omega-conotoxin from Conus magus venom.";
RL Biochemistry 26:2086-2090(1987).
RN [4]
RP DISULFIDE BONDS.
RX PubMed=8537186;
RA Chung D., Gaur S., Bell J.R., Ramachandran J., Nadasdi L.;
RT "Determination of disulfide bridge pattern in omega-conopeptides.";
RL Int. J. Pept. Protein Res. 46:320-325(1995).
RN [5]
RP SYNTHESIS, AND MUTAGENESIS OF LYS-47 AND TYR-58.
RX PubMed=7826361;
RA Kim J.I., Takahashi M., Ohtake A., Wakamiya A., Sato K.;
RT "Tyr13 is essential for the activity of omega-conotoxin MVIIA and
RT GVIA, specific N-type calcium channel blockers.";
RL Biochem. Biophys. Res. Commun. 206:449-454(1995).
RN [6]
RP STRUCTURE BY NMR.
RX MEDLINE=95367555; PubMed=7640281;
RA Kohno T., Kim J.-I., Kobayashi K., Kodera Y., Maeda T., Sato K.;
RT "Three-dimensional structure in solution of the calcium channel

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RT   blocker omega-conotoxin MVIIA.";
RL   Biochemistry 34:10256-10265(1995).
RN   [7]
RP   STRUCTURE BY NMR.
RX   PubMed=7656969;
RA   Basus V.J., Nadasdi L., Ramachandran J., Miljanich G.P.;
RT   "Solution structure of omega-conotoxin MVIIA using 2D NMR
RT   spectroscopy.";
RL   FEBS Lett. 370:163-169(1995).
RN   [8]
RP   STRUCTURE BY NMR.
RX   MEDLINE=97070382; PubMed=8913308;
RA   Nielsen K.J., Thomas L., Lewis R.J., Alewood P.F., Craik D.J.;
RT   "A consensus structure for omega-conotoxins with different
RT   selectivities for voltage-sensitive calcium channel subtypes:
RT   comparison of MVIIA, SVIB and SNX-202.";
RL   J. Mol. Biol. 263:297-310(1996).
RN   [9]
RP   STRUCTURE BY NMR.
RX   PubMed=10373375;
RA   Nielsen K.J., Adams D., Thomas L., Bond T., Alewood P.F., Craik D.J.,
RA   Lewis R.J.;
RT   "Structure-activity relationships of omega-conotoxins MVIIA, MVIIC and
RT   14 loop splice hybrids at N and P/Q-type calcium channels.";
RL   J. Mol. Biol. 289:1405-1421(1999).
RN   [10]
RP   STRUCTURE BY NMR.
RX   PubMed=10747778;
RA   Atkinson R.A., Kieffer B., Dejaegere A., Sirockin F., Lefevre J.-F.;
RT   "Structural and dynamic characterization of omega-conotoxin MVIIA: the
RT   binding loop exhibits slow conformational exchange.";
RL   Biochemistry 39:3908-3919(2000).
RN   [11]
RP   STRUCTURE BY NMR.
RX   MEDLINE=21243158; PubMed=11344322;
RA   Goldenberg D.P., Koehn R.E., Gilbert D.E., Wagner G.;
RT   "Solution structure and backbone dynamics of an omega-conotoxin
RT   precursor.";
RL   Protein Sci. 10:538-550(2001).
CC   -!- FUNCTION: Omega-conotoxins act at presynaptic membranes, they bind
CC       and block voltage-sensitive calcium channels (VSCC). This toxin
CC       blocks N-type calcium channels.
CC   -!- SUBCELLULAR LOCATION: Secreted.
CC   -!- TISSUE SPECIFICITY: Expressed by the venom duct.
CC   -!- PHARMACEUTICAL: Is under clinical trial by Neurex. It blocks acute
CC       pain in patients who no longer obtain relief from opiate drugs. It
CC       is 100 to 1000 times more potent than morphine. By blocking
CC       calcium channels it disable nerves that transmit pain signals.
CC   -!- SIMILARITY: BELONGS TO THE O-SUPERFAMILY OF CONOTOXINS. OMEGA-TYPE
CC       FAMILY.
CC   -!- DATABASE: NAME=Ziconotide Source; NOTE=Web site on ziconotide;
CC       WWW="http://docmd.com/ziconotide/".
DR   PIR; C60133; C60133.
DR   PIR; JH0700; JH0700.
DR   PDB; 1OMG; 03-APR-96.
DR   PDB; 1MVI; 12-AUG-97.
DR   PDB; 1DW4; 01-MAR-00.
DR   PDB; 1DW5; 01-MAR-00.
DR   PDB; 1FEO; 23-AUG-00.
KW   Presynaptic neurotoxin; Neurotoxin; Toxin; Calcium channel inhibitor;
KW   Amidation; Signal; 3D-structure; Pharmaceutical.
FT   SIGNAL       1     22       POTENTIAL.
FT   PROPEP      23     45
FT   PEPTIDE     46     70       OMEGA-CONOTOXIN MVIIA.
FT   DISULFID    46     61
FT   DISULFID    53     65
FT   DISULFID    60     70
FT   MOD_RES     70     70       AMIDATION (G-71 PROVIDE AMIDE GROUP).
FT   MUTAGEN     47     47       K->A: LITTLE DECREASE IN ACTIVITY.
FT   MUTAGEN     58     58       Y->A: STRONG DECREASE IN ACTIVITY.
SQ   SEQUENCE   71 AA;  7587 MW;  E2A32725C81AF31D CRC64;

  Query Match             80.3%;  Score 151;  DB 1;  Length 71;
  Best Local Similarity   100.0%;  Pred. No. 1.3e-11;
  Matches   25;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy       5 CKGKGAKCSRLMYDCCTGSCRSGKC 29
           |||||||||||||||||||||||||
Db      46 CKGKGAKCSRLMYDCCTGSCRSGKC 70


RESULT 2
CXOB_CONCT
ID   CXOB_CONCT     STANDARD;      PRT;    25 AA.
AC   P58918;
DT   15-JUN-2002 (Rel. 41, Created)
DT   15-JUN-2002 (Rel. 41, Last sequence update)
DT   15-JUN-2002 (Rel. 41, Last annotation update)
DE   Omega-conotoxin CVIB.
OS   Conus catus (Cat cone).
OC   Eukaryota; Metazoa; Mollusca; Gastropoda; Caenogastropoda;
OC   Neogastropoda; Conoidea; Conidae; Conus.
OX   NCBI_TaxID=101291;
RN   [1]
RP   SEQUENCE, AND SYNTHESIS.
RC   TISSUE=Venom;
RX   PubMed=10938268;
RA   Lewis R.J., Nielsen K.J., Craik D.J., Loughnan M.L., Adams D.A.,
RA   Sharpe I.A., Luchian T., Adams D.J., Bond T., Thomas L., Jones A.,
RA   Matheson J.-L., Drinkwater R., Andrews P.R., Alewood P.F.;
RT   "Novel omega-conotoxins from Conus catus discriminate among neuronal
RT   calcium channel subtypes.";
RL   J. Biol. Chem. 275:35335-35344(2000).
CC   -!- FUNCTION: Omega-conotoxins act at presynaptic membranes, they bind
CC       and block voltage-sensitive calcium channels (VSCC) (By
CC       similarity). This toxin blocks N-, P-, and Q-type calcium
CC       channels.
CC   -!- SUBCELLULAR LOCATION: Secreted.
CC   -!- TISSUE SPECIFICITY: Expressed by the venom duct.
CC   -!- SIMILARITY: BELONGS TO THE O-SUPERFAMILY OF CONOTOXINS. OMEGA-TYPE
CC       FAMILY.
KW   Presynaptic neurotoxin; Neurotoxin; Toxin; Calcium channel inhibitor;
KW   Amidation.
FT   DISULFID      1     16       BY SIMILARITY.
FT   DISULFID      8     20       BY SIMILARITY.
FT   DISULFID     15     25       BY SIMILARITY.
FT   MOD_RES      25     25       AMIDATION.
SQ   SEQUENCE   25 AA;  2717 MW;  D41A9E5F5AFA9552 CRC64;

  Query Match             66.0%;  Score 124;  DB 1;  Length 25;
  Best Local Similarity   76.0%;  Pred. No. 8.7e-09;
  Matches   19;  Conservative    2;  Mismatches    4;  Indels    0;  Gaps    0;

Qy       5 CKGKGAKCSRLMYDCCTGSCRSGKC 29
           |||||| | : ||||| ||||||:|
Db       1 CKGKGASCRKTMYDCCRGSCRSGRC 25


RESULT 3
CXOC_CONCT
ID   CXOC_CONCT     STANDARD;      PRT;    26 AA.
AC   P58919;
DT   15-JUN-2002 (Rel. 41, Created)
DT   15-JUN-2002 (Rel. 41, Last sequence update)
DT   15-JUN-2002 (Rel. 41, Last annotation update)
DE   Omega-conotoxin CVIC.
OS   Conus catus (Cat cone).
OC   Eukaryota; Metazoa; Mollusca; Gastropoda; Caenogastropoda;
OC   Neogastropoda; Conoidea; Conidae; Conus.
OX   NCBI_TaxID=101291;
RN   [1]
RP   SEQUENCE, AND SYNTHESIS.
RC   TISSUE=Venom;
RX   PubMed=10938268;
RA   Lewis R.J., Nielsen K.J., Craik D.J., Loughnan M.L., Adams D.A.,
RA   Sharpe I.A., Luchian T., Adams D.J., Bond T., Thomas L., Jones A.,
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RA   Matheson J.-L., Drinkwater R., Andrews P.R., Alewood P.F.;
RT   "Novel omega-conotoxins from Conus catus discriminate among neuronal
RT   calcium channel subtypes.";
RL   J. Biol. Chem. 275:35335-35344(2000).
CC   -!- FUNCTION: Omega-conotoxins act at presynaptic membranes, they bind
CC       and block voltage-sensitive calcium channels (VSCC) (By
CC       similarity). This toxin blocks N-, P-, and Q-type calcium
CC       channels.
CC   -!- SUBCELLULAR LOCATION: Secreted.
CC   -!- TISSUE SPECIFICITY: Expressed by the venom duct.
CC   -!- SIMILARITY: BELONGS TO THE O-SUPERFAMILY OF CONOTOXINS. OMEGA-TYPE
CC       FAMILY.
KW   Presynaptic neurotoxin; Neurotoxin; Toxin; Calcium channel inhibitor;
KW   Amidation.
FT   DISULFID      1     16       BY SIMILARITY.
FT   DISULFID      8     20       BY SIMILARITY.
FT   DISULFID     15     26       BY SIMILARITY.
FT   MOD_RES      26     26       AMIDATION.
SQ   SEQUENCE   26 AA;  2790 MW;  56EFC382335C4A8B CRC64;

  Query Match             65.2%;  Score 122.5;  DB 1;  Length 26;
  Best Local Similarity   80.8%;  Pred. No. 1.3e-08;
  Matches   21;  Conservative    1;  Mismatches    3;  Indels    1;  Gaps    1;

Qy       5 CKGKGAKCSRLMYDCCTGSC-RSGKC 29
           |||||  ||:|||||||||| | |||
Db       1 CKGKGQSCSKLMYDCCTGSCSRRGKC 26


RESULT 4
CXOB_CONMA
ID   CXOB_CONMA     STANDARD;      PRT;    25 AA.
AC   P05485;
DT   01-NOV-1988 (Rel. 09, Created)
DT   01-NOV-1988 (Rel. 09, Last sequence update)
DT   15-JUN-2002 (Rel. 41, Last annotation update)
DE   Omega-conotoxin MVIIb (SNX-159).
OS   Conus magus (Magus cone).
OC   Eukaryota; Metazoa; Mollusca; Gastropoda; Caenogastropoda;
OC   Neogastropoda; Conoidea; Conidae; Conus.
OX   NCBI_TaxID=6492;
RN   [1]
RP   SEQUENCE.
RX   MEDLINE=87299637; PubMed=2441741;
RA   Olivera B.M., Cruz L.J., de Santos V., Lecheminant G.W., Griffin D.,
RA   Zeikus R.D., McIntosh J.M., Galyean R., Varga J., Gray W.R.,
RA   Rivier J.E.;
RT   "Neuronal calcium channel antagonists. Discrimination between calcium
RT   channel subtypes using omega-conotoxin from Conus magus venom.";
RL   Biochemistry 26:2086-2090(1987).
CC   -!- FUNCTION: Omega-conotoxins act at presynaptic membranes, they bind
CC       and block voltage-sensitive calcium channels (VSCC).
CC   -!- SUBCELLULAR LOCATION: Secreted.
CC   -!- TISSUE SPECIFICITY: Expressed by the venom duct.
CC   -!- SIMILARITY: BELONGS TO THE O-SUPERFAMILY OF CONOTOXINS. OMEGA-TYPE
CC       FAMILY.
DR   PIR; B34115; B34115.
DR   PIR; JH0701; JH0701.
DR   HSSP; P05484; 1MVI.
KW   Presynaptic neurotoxin; Neurotoxin; Toxin; Calcium channel inhibitor;
KW   Amidation.
FT   DISULFID      1     16
FT   DISULFID      8     20
FT   DISULFID     15     25
FT   MOD_RES      25     25       AMIDATION.
SQ   SEQUENCE   25 AA;  2626 MW;  E4B9CE5EFAA3734D CRC64;

  Query Match             63.8%;  Score 120;  DB 1;  Length 25;
  Best Local Similarity   76.0%;  Pred. No. 2.6e-08;
  Matches   19;  Conservative    0;  Mismatches    6;  Indels    0;  Gaps    0;

Qy       5 CKGKGAKCSRLMYDCCTGSCRSGKC 29
           |||||| | |  ||||||||  |||
Db       1 CKGKGASCHRTSYDCCTGSCNRGKC 25


RESULT 5
CXO7_CONCN
ID   CXO7_CONCN     STANDARD;      PRT;    27 AA.
AC   P58916;
DT   15-JUN-2002 (Rel. 41, Created)
DT   15-JUN-2002 (Rel. 41, Last sequence update)
DT   15-JUN-2002 (Rel. 41, Last annotation update)
DE   Omega-conotoxin CnVIIA.
OS   Conus consors (Singed cone).
OC   Eukaryota; Metazoa; Mollusca; Gastropoda; Caenogastropoda;
OC   Neogastropoda; Conoidea; Conidae; Conus.
OX   NCBI_TaxID=101297;
RN   [1]
RP   SEQUENCE, SYNTHESIS, AND MASS SPECTROMETRY.
RC   TISSUE=Venom;
RX   PubMed=11724570;
RA   Favreau P., Gilles N., Lamthanh H., Bournaud R., Shimahara T.,
RA   Bouet F., Laboute P., Letourneux Y., Menez A., Molgo J., Le Gall F.;
RT   "A new omega-conotoxin that targets N-type voltage-sensitive calcium
RT   channels with unusual specificity.";
RL   Biochemistry 40:14567-14575(2001).
CC   -!- FUNCTION: Omega-conotoxins act at presynaptic membranes, they bind
CC       and block voltage-sensitive calcium channels (VSCC). This toxin
CC       blocks N-type calcium channels, but unexpectedly, does not show
CC       any blocking activity at amphibian neuromuscular junction. Causes
CC       shaking activity, and, at higher doses, causes mild tremors when
CC       injected intracerebroventricularly into mice. Causes paralysis,
CC       and, at higher doses, causes death when injected intramuscularly
CC       into fish.
CC   -!- SUBCELLULAR LOCATION: Secreted.
CC   -!- TISSUE SPECIFICITY: Expressed by the venom duct.
CC   -!- MASS SPECTROMETRY: MW=2847.74; METHOD=Electrospray.
CC   -!- SIMILARITY: BELONGS TO THE O-SUPERFAMILY OF CONOTOXINS. OMEGA-TYPE
CC       FAMILY.
KW   Presynaptic neurotoxin; Neurotoxin; Toxin; Calcium channel inhibitor;
KW   Hydroxylation; Amidation.
FT   BINDING      13     13       ESSENTIAL FOR CALCIUM CHANNEL BINDING (BY
FT                                SIMILARITY).
FT   DISULFID      1     16       BY SIMILARITY.
FT   DISULFID      8     20       BY SIMILARITY.
FT   DISULFID     15     27       BY SIMILARITY.
FT   MOD_RES       7      7       HYDROXYLATION.
FT   MOD_RES      27     27       AMIDATION.
SQ   SEQUENCE   27 AA;  2839 MW;  B9DEFD1491F2CB4A CRC64;

  Query Match             61.2%;  Score 115;  DB 1;  Length 27;
  Best Local Similarity   74.1%;  Pred. No. 1e-07;
  Matches   20;  Conservative    2;  Mismatches    3;  Indels    2;  Gaps    1;

Qy       5 CKGKGAKCSRLMYDCCTGSCRS--GKC 29
           |||||| |:|||||||  ||| |  |:|
Db       1 CKGKGAPCTRLMYDCCHGSCSSSKGRC 27


RESULT 6
CXO3_CONST
ID   CXO3_CONST     STANDARD;      PRT;    71 AA.
AC   Q9XZK2;
DT   16-OCT-2001 (Rel. 40, Created)
DT   16-OCT-2001 (Rel. 40, Last sequence update)
DT   15-JUN-2002 (Rel. 41, Last annotation update)
DE   Omega-type conotoxin SO3 precursor.
GN   SO3.
OS   Conus striatus (Striated cone).
OC   Eukaryota; Metazoa; Mollusca; Gastropoda; Caenogastropoda;
OC   Neogastropoda; Conoidea; Conidae; Conus.
OX   NCBI_TaxID=6493;
RN   [1]
RP   SEQUENCE FROM N.A.
RC   TISSUE=Venom duct;
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RX   MEDLINE=20037955; PubMed=10573284;
RA   Lu B.-S., Yu F., Zhao D., Huang P.-T., Huang C.-F.;
RT   "Conopeptides from Conus striatus and Conus textile by cDNA
RT   cloning.";
RL   Peptides 20:1139-1144(1999).
CC   -!- FUNCTION: Omega-conotoxins act at presynaptic membranes, they bind
CC       and block voltage-sensitive calcium channels (VSCC) (By
CC       similarity).
CC   -!- SUBCELLULAR LOCATION: Secreted (By similarity).
CC   -!- TISSUE SPECIFICITY: Expressed by the venom duct.
CC   -!- SIMILARITY: BELONGS TO THE O-SUPERFAMILY OF CONOTOXINS. OMEGA-TYPE
CC       FAMILY.
CC   ---------------------------------------------------------------------
CC   This SWISS-PROT entry is copyright. It is produced through a collaboration
CC   between the Swiss Institute of Bioinformatics and the EMBL outstation -
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CC   or send an email to license@isb-sib.ch).
CC   ---------------------------------------------------------------------
DR   EMBL; AF146348; AAD31908.1; -.
DR   HSSP; P05484; 1MVI.
DR   InterPro; IPR004214; Conotoxin.
DR   Pfam; PF02950; Conotoxin; 1.
KW   Presynaptic neurotoxin; Neurotoxin; Toxin; Calcium channel inhibitor;
KW   Signal; Amidation.
FT   SIGNAL       1     22       POTENTIAL.
FT   PROPEP       23    44       POTENTIAL.
FT   PEPTIDE      45    70       OMEGA-TYPE CONOTOXIN SO3.
FT   DISULFID     46    61       BY SIMILARITY.
FT   DISULFID     53    65       BY SIMILARITY.
FT   DISULFID     60    70       BY SIMILARITY.
FT   MOD_RES      70    70       AMIDATION (G-71 PROVIDE AMIDE GROUP)
FT                               (POTENTIAL).
SQ   SEQUENCE   71 AA;  7628 MW;  CE7070DCE3094D73 CRC64;

  Query Match             61.2%;  Score 115;  DB 1;  Length 71;
  Best Local Similarity   72.0%;  Pred. No. 2.2e-07;
  Matches   18;  Conservative    2;  Mismatches    5;  Indels    0;  Gaps    0;

Qy       5 CKGKGAKCSRLMYDCCTGSCRSGKC 29
           ||  |  |||: |:||||||||||||
Db      46 CKAAGKPCSRIAYNCCTGSCRSGKC 70


RESULT 7
CXOA_CONCT
ID   CXOA_CONCT     STANDARD;      PRT;    71 AA.
AC   P58917;
DT   15-JUN-2002 (Rel. 41, Created)
DT   15-JUN-2002 (Rel. 41, Last sequence update)
DT   15-JUN-2002 (Rel. 41, Last annotation update)
DE   Omega-conotoxin CVIA precursor.
OS   Conus catus (Cat cone).
OC   Eukaryota; Metazoa; Mollusca; Gastropoda; Caenogastropoda;
OC   Neogastropoda; Conoidea; Conidae; Conus.
OX   NCBI_TaxID=101291;
RN   [1]
RP   SEQUENCE FROM N.A., SEQUENCE OF 46-70, AND SYNTHESIS.
RC   TISSUE=Venom duct, and Venom;
RX   PubMed=10938268;
RA   Lewis R.J., Nielsen K.J., Craik D.J., Loughnan M.L., Adams D.A.,
RA   Sharpe I.A., Luchian T., Adams D.J., Bond T., Thomas L., Jones A.,
RA   Matheson J.-L., Drinkwater R., Andrews P.R., Alewood P.F.;
RT   "Novel omega-conotoxins from Conus catus discriminate among neuronal
RT   calcium channel subtypes.";
RL   J. Biol. Chem. 275:35335-35344(2000).
CC   -!- FUNCTION: Omega-conotoxins act at presynaptic membranes, they bind
CC       and block voltage-sensitive calcium channels (VSCC) (By
CC       similarity). This toxin blocks N-type calcium channels.
CC   -!- SUBCELLULAR LOCATION: Secreted.
CC   -!- TISSUE SPECIFICITY: Expressed by the venom duct.
CC   -!- SIMILARITY: BELONGS TO THE O-SUPERFAMILY OF CONOTOXINS. OMEGA-TYPE
CC       FAMILY.
KW   Presynaptic neurotoxin; Neurotoxin; Toxin; Calcium channel inhibitor;
KW   Amidation; Signal.
FT   SIGNAL       1     22       POTENTIAL.
FT   PROPEP       23    45
FT   PEPTIDE      46    70       OMEGA-CONOTOXIN CVIA.
FT   DISULFID     46    61       BY SIMILARITY.
FT   DISULFID     53    65       BY SIMILARITY.
FT   DISULFID     60    70       BY SIMILARITY.
FT   MOD_RES      70    70       AMIDATION (G-71 PROVIDE AMIDE GROUP).
SQ   SEQUENCE   71 AA;  7665 MW;  B99D9C7C74996D01 CRC64;

  Query Match             61.2%;  Score 115;  DB 1;  Length 71;
  Best Local Similarity   72.0%;  Pred. No. 2.2e-07;
  Matches   18;  Conservative    1;  Mismatches    6;  Indels    0;  Gaps    0;

Qy       5 CKGKGAKCSRLMYDCCTGSCRSGKC 29
           ||  || | |  |||||||||||:|
Db      46 CKSTGASCRRTSYDCCTGSCRSGRC 70


RESULT 8
CXOD_CONCT
ID   CXOD_CONCT     STANDARD;      PRT;    73 AA.
AC   P58920;
DT   15-JUN-2002 (Rel. 41, Created)
DT   15-JUN-2002 (Rel. 41, Last sequence update)
DT   15-JUN-2002 (Rel. 41, Last annotation update)
DE   Omega-conotoxin CVID precursor.
OS   Conus catus (Cat cone).
OC   Eukaryota; Metazoa; Mollusca; Gastropoda; Caenogastropoda;
OC   Neogastropoda; Conoidea; Conidae; Conus.
OX   NCBI_TaxID=101291;
RN   [1]
RP   SEQUENCE FROM N.A., SEQUENCE OF 46-72, SYNTHESIS, AND STRUCTURE BY
RP   NMR.
RC   TISSUE=Venom duct, and Venom;
RX   PubMed=10938268;
RA   Lewis R.J., Nielsen K.J., Craik D.J., Loughnan M.L., Adams D.A.,
RA   Sharpe I.A., Luchian T., Adams D.J., Bond T., Thomas L., Jones A.,
RA   Matheson J.-L., Drinkwater R., Andrews P.R., Alewood P.F.;
RT   "Novel omega-conotoxins from Conus catus discriminate among neuronal
RT   calcium channel subtypes.";
RL   J. Biol. Chem. 275:35335-35344(2000).
CC   -!- FUNCTION: Omega-conotoxins act at presynaptic membranes, they bind
CC       and block voltage-sensitive calcium channels (VSCC) (By
CC       similarity). This toxin blocks N-type calcium channels.
CC   -!- SUBCELLULAR LOCATION: Secreted.
CC   -!- TISSUE SPECIFICITY: Expressed by the venom duct.
CC   -!- SIMILARITY: BELONGS TO THE O-SUPERFAMILY OF CONOTOXINS. OMEGA-TYPE
CC       FAMILY.
KW   Presynaptic neurotoxin; Neurotoxin; Toxin; Calcium channel inhibitor;
KW   Amidation; Signal.
FT   SIGNAL       1     22       POTENTIAL.
FT   PROPEP       23    45
FT   PEPTIDE      46    72       OMEGA-CONOTOXIN CVID.
FT   DISULFID     46    61       BY SIMILARITY.
FT   DISULFID     53    65       BY SIMILARITY.
FT   DISULFID     60    72       BY SIMILARITY.
FT   MOD_RES      72    72       AMIDATION (G-73 PROVIDE AMIDE GROUP).
SQ   SEQUENCE   73 AA;  7748 MW;  C4CEBD30C77DAEC3 CRC64;

  Query Match             60.6%;  Score 114;  DB 1;  Length 73;
  Best Local Similarity   70.4%;  Pred. No. 2.9e-07;
  Matches   19;  Conservative    3;  Mismatches    3;  Indels    2;  Gaps    1;

Qy       5 CKGKGAKCSRLMYDCCTGSCRS--GKC 29
           || ||||||:||||||:|||    |:|
Db      46 CKSKGAKCSKLMYDCCSGSCSGTVGRC 72


RESULT 9
```

```
CXOC_CONMA
ID   CXOC_CONMA     STANDARD;      PRT;    29 AA.
AC   P37300;
DT   01-OCT-1994 (Rel. 30, Created)
DT   01-OCT-1994 (Rel. 30, Last sequence update)
DT   15-JUN-2002 (Rel. 41, Last annotation update)
DE   Omega-conotoxin MVIIc precursor (SNX-230) (Fragment).
OS   Conus magus (Magus cone).
OC   Eukaryota; Metazoa; Mollusca; Gastropoda; Caenogastropoda;
OC   Neogastropoda; Conoidea; Conidae; Conus.
OX   NCBI_TaxID=6492;
RN   [1]
RP   SEQUENCE FROM N.A., AND SYNTHESIS.
RX   MEDLINE=92337922; PubMed=1352986;
RA   Hillyard D.R., Monje V.D., Mintz I.M., Bean B.P., Nadasdi L.,
RA   Ramachandran J., Miljanich G.P., Azimi-Zoonooz A., McIntosh J.M.,
RA   Cruz L.J., Imperial J.S., Olivera B.M.;
RT   "A new Conus peptide ligand for mammalian presynaptic Ca2+ channels.";
RL   Neuron 9:69-77(1992).
RN   [2]
RP   STRUCTURE BY NMR.
RX   MEDLINE=95248539; PubMed=7731037;
RA   Farr-Jones S., Miljanich G.P., Nadasdi L., Ramachandran J.,
RA   Basus V.J.;
RT   "Solution structure of omega-conotoxin MVIIC, a high affinity ligand
RT   of P-type calcium channels, using 1H NMR spectroscopy and complete
RT   relaxation matrix analysis.";
RL   J. Mol. Biol. 248:106-124(1995).
RN   [3]
RP   STRUCTURE BY NMR.
RX   PubMed=10373375;
RA   Nielsen K.J., Adams D., Thomas L., Bond T., Alewood P.F., Craik D.J.,
RA   Lewis R.J.;
RT   "Structure-activity relationships of omega-conotoxins MVIIA, MVIIC and
RT   14 loop splice hybrids at N and P/Q-type calcium channels.";
RL   J. Mol. Biol. 289:1405-1421(1999).
RN   [4]
RP   MUTAGENESIS OF TYR-15.
RX   PubMed=7677735;
RA   Kim J.I., Takahashi M., Martin-Moutot N., Seagar M.J., Ohtake A.,
RA   Sato K.;
RT   "Tyr13 is essential for the binding of omega-conotoxin MVIIC to the
RT   P/Q-type calcium channel.";
RL   Biochem. Biophys. Res. Commun. 214:305-309(1995).
CC   -!- FUNCTION: Omega-conotoxins act at presynaptic membranes, they bind
CC       and block voltage-sensitive calcium channels (VSCC). This toxin
CC       blocks N-type calcium channels as well as types of high-threshold
CC       voltage-gated calcium channels resistant to both dihydropyridines
CC       and omega-conotoxin GVIA.
CC   -!- SUBCELLULAR LOCATION: Secreted.
CC   -!- TISSUE SPECIFICITY: Expressed by the venom duct.
CC   -!- SIMILARITY: BELONGS TO THE O-SUPERFAMILY OF CONOTOXINS. OMEGA-TYPE
CC       FAMILY.
CC   ----------------------------------------------------------------------
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CC   or send an email to license@isb-sib.ch).
CC   ----------------------------------------------------------------------
DR   EMBL; S40826; AAB22674.1; -.
DR   PIR; JH0699; JH0699.
DR   PDB; 1OMN; 01-DEC-95.
DR   PDB; 1CNN; 31-MAY-00.
KW   Presynaptic neurotoxin; Neurotoxin; Toxin; Calcium channel inhibitor;
KW   Hydroxylation; Amidation; 3D-structure.
FT   NON_TER       1      1
FT   PROPEP       <1      2
FT   PEPTIDE       3     28       OMEGA-CONOTOXIN MVIIC.
FT   BINDING      15     15       ESSENTIAL FOR CALCIUM CHANNEL BINDING.
FT   DISULFID      3     18
FT   DISULFID     10     22
FT   DISULFID     17     28
FT   MOD_RES       9      9       HYDROXYLATION (PROBABLE).
FT   MOD_RES      28     28       AMIDATION (G-29 PROVIDE AMIDE GROUP).
FT   MUTAGEN      15     15       Y->A: HIGH DECREASE IN BINDING.
SQ   SEQUENCE   29 AA;  3071 MW;  AC7A68948474728A CRC64;

  Query Match             59.8%;  Score 112.5;  DB 1;  Length 29;
  Best Local Similarity   73.1%;  Pred. No. 2.2e-07;
  Matches   19;  Conservative    2;  Mismatches    4;  Indels    1;  Gaps    1;

Qy       5 CKGKGAKCSRLMYDCCTGSC-RSGKC 29
           |||||| | : |||||:||| | |||
Db       3 CKGKGAPCRKTMYDCCSGSCGRRGKC 28


RESULT 10
CXOD_CONMA
ID   CXOD_CONMA     STANDARD;      PRT;    29 AA.
AC   Q26350;
DT   15-DEC-1998 (Rel. 37, Created)
DT   15-DEC-1998 (Rel. 37, Last sequence update)
DT   15-JUN-2002 (Rel. 41, Last annotation update)
DE   Omega-conotoxin MVIId precursor (SNX-238) (Fragment).
OS   Conus magus (Magus cone).
OC   Eukaryota; Metazoa; Mollusca; Gastropoda; Caenogastropoda;
OC   Neogastropoda; Conoidea; Conidae; Conus.
OX   NCBI_TaxID=6492;
RN   [1]
RP   SEQUENCE FROM N.A.
RX   MEDLINE=94150815; PubMed=8107968;
RA   Monje V.D., Haack J.A., Naisbitt S.R., Miljanich G., Ramachandran J.,
RA   Nasdasdi L., Olivera B.M., Hillyard D.R., Gray W.R.;
RT   "A new Conus peptide ligand for Ca channel subtypes.";
RL   Neuropharmacology 32:1141-1149(1993).
RN   [2]
RP   STRUCTURE BY NMR.
RX   PubMed=9920728;
RA   Civera C., Vazquez A., Sevilla J.M., Bruix M., Gago F., Garcia A.G.,
RA   Sevilla P.;
RT   "Solution structure determination by two-dimensional 1H NMR of
RT   omega-conotoxin MVIID, a calcium channel blocker peptide.";
RL   Biochem. Biophys. Res. Commun. 254:32-35(1999).
CC   -!- FUNCTION: Omega-conotoxins act at presynaptic membranes, they bind
CC       and block voltage-sensitive calcium channels (VSCC). This toxin
CC       blocks channels of the N-type as well as other types.
CC   -!- SUBCELLULAR LOCATION: Secreted.
CC   -!- TISSUE SPECIFICITY: Expressed by the venom duct.
CC   -!- SIMILARITY: BELONGS TO THE O-SUPERFAMILY OF CONOTOXINS. OMEGA-TYPE
CC       FAMILY.
CC   ----------------------------------------------------------------------
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CC   or send an email to license@isb-sib.ch).
CC   ----------------------------------------------------------------------
DR   EMBL; S69322; AAB29902.1; -.
DR   HSSP; P05484; 1MVI.
KW   Presynaptic neurotoxin; Neurotoxin; Toxin; Calcium channel inhibitor;
KW   Amidation.
FT   NON_TER       1      1
FT   PROPEP       <1      3
FT   PEPTIDE       4     28       OMEGA-CONOTOXIN MVIID.
FT   DISULFID      4     19
FT   DISULFID     11     23
FT   DISULFID     18     28
FT   MOD_RES      28     28       AMIDATION (G-29 PROVIDE AMIDE GROUP).
SQ   SEQUENCE   29 AA;  3104 MW;  9E04B2EA3779CB22 CRC64;

  Query Match             55.3%;  Score 104;  DB 1;  Length 29;
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  Best Local Similarity   56.0%;  Pred. No. 2.2e-06;
  Matches   14;  Conservative    6;  Mismatches    5;  Indels    0;  Gaps    0;

Qy       5 CKGKGAKCSRLMYDCCTGSCRSGKC 29
           |:|:|| | : ||:||:|||  |:|
Db       4 CQGRGASCRKTMYNCCSGSCNRGRC 28


RESULT 11
CXOB_CONST
ID   CXOB_CONST     STANDARD;      PRT;    72 AA.
AC   P28881; Q9UB25;
DT   01-DEC-1992 (Rel. 24, Created)
DT   16-OCT-2001 (Rel. 40, Last sequence update)
DT   15-JUN-2002 (Rel. 41, Last annotation update)
DE   Omega-conotoxin SVIB precursor (SNX-183).
OS   Conus striatus (Striated cone).
OC   Eukaryota; Metazoa; Mollusca; Gastropoda; Caenogastropoda;
OC   Neogastropoda; Conoidea; Conidae; Conus.
OX   NCBI_TaxID=6493;
RN   [1]
RP   SEQUENCE FROM N.A.
RC   TISSUE=Venom duct;
RX   MEDLINE=20037955; PubMed=10573284;
RA   Lu B.-S., Yu F., Zhao D., Huang P.-T., Huang C.-F.;
RT   "Conopeptides from Conus striatus and Conus textile by cDNA
RT   cloning.";
RL   Peptides 20:1139-1144(1999).
RN   [2]
RP   SEQUENCE OF 46-71, AND SYNTHESIS.
RC   TISSUE=Venom;
RX   MEDLINE=93003172; PubMed=1390774;
RA   Ramilo C., Zafaralla G.C., Nadasdi L., Hammerland L.G., Yoshikami D.,
RA   Gray W.R., Kristipati R., Ramachandran J., Miljanich G., Olivera B.M.,
RA   Cruz L.J.;
RT   "Novel alpha- and omega-conotoxins from Conus striatus venom.";
RL   Biochemistry 31:9919-9926(1992).
RN   [3]
RP   STRUCTURE BY NMR.
RX   MEDLINE=97070382; PubMed=8913308;
RA   Nielsen K.J., Thomas L., Lewis R.J., Alewood P.F., Craik D.J.;
RT   "A consensus structure for omega-conotoxins with different
RT   selectivities for voltage-sensitive calcium channel subtypes:
RT   comparison of MVIIA, SVIB and SNX-202.";
RL   J. Mol. Biol. 263:297-310(1996).
CC   -!- FUNCTION: Omega-conotoxins act at presynaptic membranes, they bind
CC       and block voltage-sensitive calcium channels (VSCC). This toxin
CC       blocks N-, P-, and Q-type calcium channels.
CC   -!- SUBCELLULAR LOCATION: Secreted.
CC   -!- TISSUE SPECIFICITY: Expressed by the venom duct.
CC   -!- SIMILARITY: BELONGS TO THE O-SUPERFAMILY OF CONOTOXINS. OMEGA-TYPE
CC       FAMILY.
CC   ---------------------------------------------------------------------
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CC   or send an email to license@isb-sib.ch).
CC   ---------------------------------------------------------------------
DR   EMBL; AF146346; AAD31906.1; -.
DR   PIR; C44379; C44379.
DR   PDB; 1MVJ; 12-AUG-97.
DR   InterPro; IPR004214; Conotoxin.
DR   Pfam; PF02950; Conotoxin; 1.
KW   Presynaptic neurotoxin; Neurotoxin; Toxin; Calcium channel inhibitor;
KW   Amidation; Signal; 3D-structure.
FT   SIGNAL       1     22       POTENTIAL.
FT   PROPEP      23     45
FT   PEPTIDE     46     71       OMEGA-CONOTOXIN SVIB.
FT   DISULFID    46     61
FT   DISULFID    53     65
FT   DISULFID    60     71
FT   MOD_RES     71     71       AMIDATION (G-72 PROVIDE AMIDE GROUP).
SQ   SEQUENCE   72 AA;  7741 MW;  1F753546AAD39908 CRC64;

  Query Match             52.1%;  Score 98;  DB 1;  Length 72;
  Best Local Similarity   59.4%;  Pred. No. 2.2e-05;
  Matches   19;  Conservative    3;  Mismatches    6;  Indels    4;  Gaps    2;

Qy       2 LPV---CKGKGAKCSRLMYDCCTGSC-RSGKC 29
             ||:   || ||  | :  ||||:||| |||||
Db      40 LPMSTRCKLKGQSCRKTSYDCCSGSCGRSGKC 71


RESULT 12
CXO7_CONGE
ID   CXO7_CONGE     STANDARD;      PRT;    29 AA.
AC   P05483;
DT   01-NOV-1988 (Rel. 09, Created)
DT   01-NOV-1988 (Rel. 09, Last sequence update)
DT   15-JUN-2002 (Rel. 41, Last annotation update)
DE   Omega-conotoxins GVIIA/GVIIB (SNX-178).
OS   Conus geographus (Geography cone).
OC   Eukaryota; Metazoa; Mollusca; Gastropoda; Caenogastropoda;
OC   Neogastropoda; Conoidea; Conidae; Conus.
OX   NCBI_TaxID=6491;
RN   [1]
RP   SEQUENCE.
RX   MEDLINE=86070213; PubMed=4071055;
RA   Olivera B.M., Gray W.R., Zeikus R.D., McIntosh J.M., Varga J.,
RA   Rivier J.E., de Santos V., Cruz L.J.;
RT   "Peptide neurotoxins from fish-hunting cone snails.";
RL   Science 230:1338-1343(1985).
CC   -!- FUNCTION: Omega-conotoxins act at presynaptic membranes, they bind
CC       and block voltage-sensitive calcium channels (VSCC).
CC   -!- SUBCELLULAR LOCATION: Secreted.
CC   -!- TISSUE SPECIFICITY: Expressed by the venom duct.
CC   -!- MISCELLANEOUS: THE SEQUENCE SHOWN IS THAT OF CONOTOXIN GVIIA.
CC   -!- SIMILARITY: BELONGS TO THE O-SUPERFAMILY OF CONOTOXINS. OMEGA-TYPE
CC       FAMILY.
DR   PIR; A43620; A43620.
DR   PIR; B43620; B43620.
KW   Presynaptic neurotoxin; Neurotoxin; Toxin; Calcium channel inhibitor;
KW   Hydroxylation.
FT   MOD_RES      4      4       HYDROXYLATION.
FT   MOD_RES      7      7       HYDROXYLATION.
FT   DISULFID     1     16
FT   DISULFID     8     19
FT   DISULFID    15     26
FT   VARIANT     21     21       L -> S (IN GVIIB).
SQ   SEQUENCE   29 AA;  3290 MW;  57307C69583FB1E7 CRC64;

  Query Match             40.2%;  Score 75.5;  DB 1;  Length 29;
  Best Local Similarity   58.6%;  Pred. No. 0.0048;
  Matches   17;  Conservative    0;  Mismatches    9;  Indels    3;  Gaps    2;

Qy       5 CKGKGAKCSRLMYDCCTGSC--RSGKCTR 31
           ||  |  ||| | |||| ||   | || |
Db       1 CKSPGTPCSRGMRDCCT-SCLLYSNKCRR 28


RESULT 13
MT12_MYTED
ID   MT12_MYTED     STANDARD;      PRT;    72 AA.
AC   P80247; O62555;
DT   01-FEB-1994 (Rel. 28, Created)
DT   16-OCT-2001 (Rel. 40, Last sequence update)
DT   15-JUN-2002 (Rel. 41, Last annotation update)
DE   Metallothionein 10-II (MT-10-II).
OS   Mytilus edulis (Blue mussel).
OC   Eukaryota; Metazoa; Mollusca; Bivalvia; Pteriomorphia; Mytiloida;
OC   Mytiloidea; Mytilidae; Mytilus.
OX   NCBI_TaxID=6550;
RN   [1]
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RP   SEQUENCE.
RX   MEDLINE=94062828; PubMed=8243463;
RA   Mackay E.A., Overnell J., Dunbar B., Davidson I., Hunziker P.E.,
RA   Kaegi J.H.R., Fothergill J.E.;
RT   "Complete amino acid sequences of five dimeric and four monomeric
RT   forms of metallothionein from the edible mussel Mytilus edulis.";
RL   Eur. J. Biochem. 218:183-194(1993).
RN   [2]
RP   SEQUENCE FROM N.A.
RC   TISSUE=Digestive gland;
RX   MEDLINE=99206055; PubMed=10190057;
RA   Barsyte D., White K.N., Lovejoy D.A.;
RT   "Cloning and characterization of metallothionein cDNAs in the mussel
RT   Mytilus edulis L. digestive gland.";
RL   Comp. Biochem. Physiol. 122C:287-296(1999).
CC   -!- FUNCTION: THE METALLOTHIONEINS ARE INVOLVED IN THE CELLULAR
CC       SEQUESTRATION OF TOXIC METAL IONS.
CC   -!- SUBUNIT: MONOMER.
CC   -!- INDUCTION: BY CADMIUM.
CC   -!- SIMILARITY: BELONGS TO THE METALLOTHIONEIN SUPERFAMILY; FAMILY 2.
CC   ---------------------------------------------------------------------
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CC   ---------------------------------------------------------------------
DR   EMBL; AJ005453; CAA06550.1; -.
DR   PIR; S39417; S39417.
DR   InterPro; IPR003019; Metallthion.
DR   InterPro; IPR001008; Mtllthion_mlsc.
DR   Pfam; PF00131; metalthio; 1.
DR   PRINTS; PR00875; MTMOLLUSC.
KW   Metal-binding; Metal-thiolate cluster; Cadmium.
FT   INIT_MET      0      0
FT   CONFLICT     21     21       D -> E (IN REF. 1).
SQ   SEQUENCE   72 AA;  7022 MW;  7FA99D945C35DE19 CRC64;

  Query Match             34.0%;  Score 64;  DB 1;  Length 72;
  Best Local Similarity   50.0%;  Pred. No. 0.21;
  Matches   14;  Conservative    1;  Mismatches   11;  Indels    2;  Gaps    2;

Qy       5 CKGKGAKCSRLMYDC-CTGSCRSGK-CT 30
           | |   |||      | |:|||  || ||
Db      31 CSGADCKCSGCKVVCKCSGSCECGKGCT 58


RESULT 14
MT3_RAT
ID   MT3_RAT        STANDARD;      PRT;    66 AA.
AC   P37361;
DT   01-OCT-1994 (Rel. 30, Created)
DT   01-OCT-1994 (Rel. 30, Last sequence update)
DT   15-JUN-2002 (Rel. 41, Last annotation update)
DE   Metallothionein-III (MT-III) (Growth inhibitory factor) (GIF).
GN   MT3.
OS   Rattus norvegicus (Rat).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Rattus.
OX   NCBI_TaxID=10116;
RN   [1]
RP   SEQUENCE FROM N.A.
RX   MEDLINE=94018480; PubMed=8412560;
RA   Kobayashi H., Uchida Y., Ihara Y., Nakajima K., Kohsaka S.,
RA   Miyatake T., Tsuji S.;
RT   "Molecular cloning of rat growth inhibitory factor cDNA and the
RT   expression in the central nervous system.";
RL   Brain Res. Mol. Brain Res. 19:188-194(1993).
RN   [2]
RP   SEQUENCE FROM N.A.
RC   TISSUE=Glial tumor;
RA   Amoureux M.C., Rethsaus E., Wurch T., Colpaert F.C., Pauwels P.J.;
RL   Submitted (JUL-1995) to the EMBL/GenBank/DDBJ databases.
RN   [3]
RP   SEQUENCE FROM N.A.
RC   STRAIN=Sprague-Dawley;
RA   Chapman G.A., Kille P.;
RL   Submitted (SEP-1996) to the EMBL/GenBank/DDBJ databases.
CC   -!- FUNCTION: BINDS HEAVY METALS. CONTAINS ZINC AND COPPER ATOMS AND
CC       ONLY A NEGLIGIBLE AMOUNT OF CADMIUM (BY SIMILARITY).
CC   -!- TISSUE SPECIFICITY: BRAIN.
CC   -!- SIMILARITY: BELONGS TO THE METALLOTHIONEIN SUPERFAMILY; FAMILY 1.
CC   ---------------------------------------------------------------------
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CC   ---------------------------------------------------------------------
DR   EMBL; S65838; AAB28366.1; -.
DR   EMBL; X89603; CAA61762.1; -.
DR   EMBL; Y08235; CAA69404.1; -.
DR   HSSP; P28184; 1JI9.
DR   InterPro; IPR003019; Metallthion.
DR   InterPro; IPR000006; Metllthion_vert.
DR   Pfam; PF00131; metalthio; 1.
DR   PRINTS; PR00860; MTVERTEBRATE.
DR   PROSITE; PS00203; METALLOTHIONEIN_VRT; 1.
KW   Metal-binding; Metal-thiolate cluster; Zinc; Copper; Acetylation.
FT   MOD_RES       1      1       ACETYLATION (BY SIMILARITY).
FT   DOMAIN        1     30       BETA.
FT   DOMAIN       31     66       ALPHA.
FT   METAL         6      6       CLUSTER B (BY SIMILARITY).
FT   METAL         8      8       CLUSTER B (BY SIMILARITY).
FT   METAL        14     14       CLUSTER B (BY SIMILARITY).
FT   METAL        16     16       CLUSTER B (BY SIMILARITY).
FT   METAL        20     20       CLUSTER B (BY SIMILARITY).
FT   METAL        22     22       CLUSTER B (BY SIMILARITY).
FT   METAL        25     25       CLUSTER B (BY SIMILARITY).
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SQ   SEQUENCE   66 AA;  6809 MW;  BE7538E85664EBF8 CRC64;

  Query Match             31.6%;  Score 59.5;  DB 1;  Length 66;
  Best Local Similarity   41.4%;  Pred. No. 0.68;
  Matches   12;  Conservative    4;  Mismatches   10;  Indels    3;  Gaps    2;

Qy       5 CKGKGAKCSRLMYDCCTGSCRSG--KCTR 31
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Db      20 CKCKGCKCTNCKKSCCS-CCPAGCEKCAK 47


RESULT 15
MT3_MOUSE
ID   MT3_MOUSE      STANDARD;      PRT;    68 AA.
AC   P28184;
DT   01-DEC-1992 (Rel. 24, Created)
DT   01-DEC-1992 (Rel. 24, Last sequence update)
DT   15-JUN-2002 (Rel. 41, Last annotation update)
DE   Metallothionein-III (MT-III) (Growth inhibitory factor) (GIF).
GN   MT3.
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OS   Mus musculus (Mouse).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
OX   NCBI_TaxID=10090;
RN   [1]
RP   SEQUENCE FROM N.A.
RC   TISSUE=Brain;
RX   MEDLINE=92335292; PubMed=1631128;
RA   Palmiter R.D., Findley S.D., Whitmore T.E., Durnam D.M.;
RT   "MT-III, a brain-specific member of the metallothionein gene family.";
RL   Proc. Natl. Acad. Sci. U.S.A. 89:6333-6337(1992).
RN   [2]
RP   SEQUENCE FROM N.A.
RX   MEDLINE=94314230; PubMed=8039715;
RA   Naruse S., Igarashi S., Furuya T., Kobayashi H., Miyatake T.,
RA   Tsuji S.;
RT   "Structures of the human and mouse growth inhibitory factor-encoding
RT   genes.";
RL   Gene 144:283-287(1994).
RN   [3]
RP   STRUCTURE BY NMR OF 32-68.
RX   MEDLINE=21444630; PubMed=11560491;
RA   Oz G., Zangger K., Armitage I.M.;
RT   "Three-dimensional structure and dynamics of a brain specific growth
RT   inhibitory factor: metallothionein-3.";
RL   Biochemistry 40:11433-11441(2001).
CC   -!- FUNCTION: INHIBITS SURVIVAL AND NEURITE FORMATION OF CORTICAL
CC       NEURONS IN VITRO.
CC   -!- FUNCTION: BINDS HEAVY METALS. CONTAINS ZINC AND COPPER ATOMS AND
CC       ONLY A NEGLIGIBLE AMOUNT OF CADMIUM (BY SIMILARITY).
CC   -!- TISSUE SPECIFICITY: BRAIN.
CC   -!- SIMILARITY: BELONGS TO THE METALLOTHIONEIN SUPERFAMILY; FAMILY 1.
CC   ----------------------------------------------------------------------
CC   This SWISS-PROT entry is copyright. It is produced through a collaboration
CC   between the Swiss Institute of Bioinformatics and the EMBL outstation -
CC   the European Bioinformatics Institute. There are no restrictions on its
CC   use by non-profit institutions as long as its content is in no way
CC   modified and this statement is not removed. Usage by and for commercial
CC   entities requires a license agreement (See http://www.isb-sib.ch/announce/
CC   or send an email to license@isb-sib.ch).
CC   ----------------------------------------------------------------------
DR   EMBL; M93310; AAA39529.1; -.
DR   EMBL; S72046; AAB31397.1; -.
DR   PIR; A46034; A46034.
DR   PDB; 1JI9; 03-OCT-01.
DR   MGD; MGI:97173; Mt3.
DR   InterPro; IPR003019; Metallthion.
DR   InterPro; IPR000006; Metllthion_vert.
DR   Pfam; PF00131; metalthio; 1.
DR   PRINTS; PR00860; MTVERTEBRATE.
DR   PROSITE; PS00203; METALLOTHIONEIN_VRT; 1.
KW   Metal-binding; Metal-thiolate cluster; Zinc; Copper; Acetylation;
KW   3D-structure.
FT   MOD_RES       1      1       ACETYLATION (BY SIMILARITY).
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FT   DOMAIN       31     68       ALPHA.
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SQ   SEQUENCE   68 AA;  7009 MW;  791AF60E38FED3CA CRC64;

  Query Match             31.6%;  Score 59.5;  DB 1;  Length 68;
  Best Local Similarity   41.4%;  Pred. No. 0.69;
  Matches   12;  Conservative    4;  Mismatches   10;  Indels    3;  Gaps    2;

Qy       5 CKGKGAKCSRLMYDCCTGSCRSG--KCTR 31
           || || ||:     ||:  | :|  || :
Db      20 CKCKGCKCTNCKKSCCS-CCPAGCEKCAK 47


Search completed: March 17, 2003, 07:24:18
Job time : 6.83969 secs
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